

Appl. No. 09/865,295
Amd. Dated March 3, 2005
Reply to Office Action of December 13, 2004

Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (original): A method for monitoring performance of an optical communication link, said method comprising:

at a first intermediate location along said link, separating a portion of an optical signal traveling along said link to form a first measurement optical signal;

detecting said first measurement optical signal to form a first measurement electrical signal; and

performing error correction decoding on said first measurement electrical signal to generate an indication of correct receipt of data at said first intermediate location.

Claim 2 (original): The method of claim 1 further comprising:

using said indication of correct receipt of data at said first location to determine a fault along said link prior to said first intermediate location.

Claim 3 (original): The method of claim 1 wherein said optical signal comprises a WDM signal and separating comprises:

isolating a portion of a particular wavelength component of said optical signal.

Claim 4 (original): The method of claim 1 further comprising:

at a second location along said link, separating a portion of an optical signal traveling along said link to form a second measurement optical signal;

detecting said second measurement optical signal to form a second measurement electrical signal; and

performing error correction decoding on said second measurement electrical signal to generate an indication of correct receipt of data at said second intermediate location.

Claim 5 (original): The method of claim 4 further comprising:

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using said indications of correct receipt of data at said first intermediate location and at said second intermediate location to locate a fault along said link prior to said second intermediate location.

Claim 6 (original): Apparatus for monitoring performance of an optical communication link at an intermediate location along said link, said apparatus comprising:

- a coupler that separates a portion of an optical signal traveling along said link;
- an optical receiver that recovers data based on said portion of said optical signal;
- an error correction decoding circuit that identifies errors in receipt of said data; and
- a link verification stage that generates an indication of link operation based on errors identified by said error correction decoding circuit.

Claim 7 (original): The apparatus of claim 6 further comprising:
a filter that isolates a particular wavelength component of said portion of said optical signal for input to said optical receiver.

Claim 8 (original): The apparatus of claim 7 further comprising:
an optical amplifier that boosts portion of said optical signal.

Claim 9 (original): The apparatus of claim 7 wherein said filter comprises a tunable filter.

Claim 10 (original): The apparatus of claim 9 wherein said link verification stage tunes said tunable filter to test a selected wavelength component.

Claim 11 (original): The apparatus of claim 6 wherein said optical receiver comprises:
a photodetector circuit that generates an electrical signal based on said portion of said optical signal; and
a demodulator that recovers data from said electrical signal.

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Claim 12 (original): A system for locating a fault along an optical communication link, said system comprising:

a first link monitor that monitors performance of said link at a first intermediate location along said link; and

a second link monitor that monitors performance of said link at a second intermediate location along said link; and

wherein each of said first link monitor and said second link monitor comprise:

a coupler that separates a portion of an optical signal traveling along said link;
an optical receiver that recovers data based on said portion of said optical signal;
an error correction decoding circuit that identifies errors in receipt of said data;

and

a link verification stage that generates an indication of link operation based on errors detected by said error correction decoding circuit.

Claim 13 (original): The system of claim 12 wherein a fault is located based on said indications of link operation from said first link monitor and said second link monitor.

Claim 14 (original): The system of claim 12 wherein each of said first link monitor and said second link monitor further comprise:

a filter that isolates a particular wavelength component of said portion of said optical signal for input to said optical receiver.

Claim 15 (original): The system of claim 14 wherein said filter comprises a tunable filter.

Claim 16 (original): The system of claim 12 wherein said optical receiver comprises:
a photodetector circuit that generates an electrical signal based on said portion of said optical signal; and

a demodulator that recovers data from said electrical signal.

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Claim 17 (original): Apparatus for monitoring performance of an optical communication link at an intermediate location along said link, said apparatus comprising:

means for separating a portion of an optical signal traveling along said link;
means for recovering data based on said portion of said optical signal;
means for identifying errors in receipt of said data; and
means for generating an indication of link operation based on errors detected by said error identifying means.

Claim 18 (original): The apparatus of claim 17 further comprising:

means for isolating a particular wavelength component of said portion of said optical signal for input to said recovering means.

Claim 19 (original): The apparatus of claim 18 wherein said isolating means comprises a tunable filter.

Claim 20 (original): The apparatus of claim 19 wherein said generating means tunes said tunable filter to test a selected wavelength component.

Claim 21 (original): The apparatus of claim 17 wherein said recovering means comprises:

a photodetector circuit that generates an electrical signal based on said portion of said optical signal; and
a demodulator that recovers data from said electrical signal.

Claim 22 (currently amended): A method for locating a fault on an optical link, said method comprising:

receiving indications of whether ~~an~~ a data optical signal is received successfully from a plurality of monitor locations along an optical link; and
determining a location of said fault to be beyond a last monitor location receiving said data optical signal successfully.

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Claim 23 (currently amended): Apparatus for locating a fault on an optical link, said apparatus comprising:

means for receiving indications of whether ~~an~~ a data optical signal is received successfully from a plurality of monitor locations along an optical link; and

means for determining a location of said fault to be beyond a last monitor location receiving said data optical signal successfully.

Claim 24 (currently amended): A computer program product for locating a fault on an optical link, said product comprising:

code that causes reception of indications of whether ~~an~~ a data optical signal is received successfully from a plurality of monitor locations along an optical link;

code that causes a location of said fault to be determined to be beyond a last monitor location receiving said data optical signal successfully; and

a computer-readable storage medium that stores the codes.

Claim 25 (currently amended): Apparatus for locating a fault on an optical link, said apparatus comprising:

a processor that executes instructions;

a computer-readable storage medium that stores said instructions, said instructions comprising:

code that causes reception of indications of whether ~~an~~ a data optical signal is received successfully from a plurality of monitor locations along an optical link; and

code that causes a location of said fault to be determined to be beyond a last monitor location receiving said data optical signal successfully.